Favipiravir pharmacokinetics

Favipiravir pharmacokinetic model is driven by the following equations:

$$\frac{dA_c}{dt} = -kA_c - k_{enz}A_eA_c \tag{1}$$

$$\frac{dA_e}{dt} = R_{in} - k_{out}(1 + C_c\alpha_{deg}e^{\lambda t})A_e \tag{2}$$

$$\frac{dR_{in}}{dt} = k_{out}A_{e0} \tag{3}$$

$$\frac{dC_c}{dt} = \frac{A_c}{V} \tag{4}$$

With A_c the amount of favipiravir in the central compartment, C_c the FPV plasmatic concentration, A_e the enzymatic activity level, k the first-order elimination rate, k_{enz} the enzyme-dependent first-order elimination rate, k_{out} the enzyme elimination rate, R_{in} is the zero-order enzyme synthesis rate, α_{deg} the linear effect of the favipiravir concentration on the enzyme elimination rate, V the volume of distribution of FPV and λ the rate at which enzyme elimination decreases, with A_{e0} set as 1 at the beginning of the infusion.